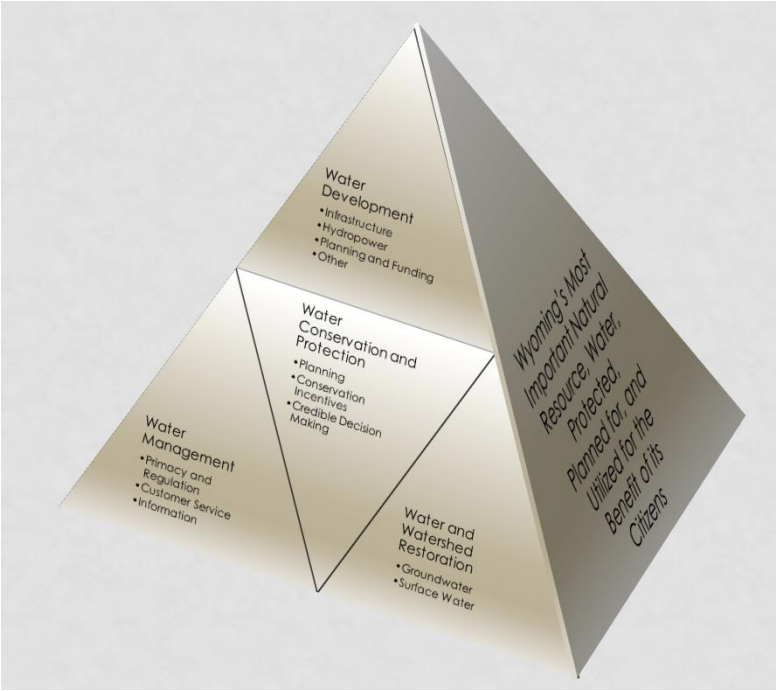
"Wyoming's Most Important Natural Resource, Water, Protected, Planned for, and Utilized for the Benefit of its Citizens"
-Governor Matt Mead

Wyoming Water Strategy Public Input Sessions
Possible Initiatives Executive Summary



About this document:

Over the past few months we held nine official listening sessions in communities throughout the state and countless small meetings with groups and citizens in other settings. These created a volume of information and thoughts on issues and opportunities related to Wyoming water. The following is a compilation of possible initiatives and actions that came from these interactions. The initiatives presented below are not all encompassing, but represent an attempt at addressing those areas of opportunity where the greatest level of consensus existed. Likewise, it should not be assumed that these initiatives are the Water Strategy; rather, they represent a pool of possibilities from which the final initiatives will be selected.

In considering these initiatives a few key parameters are critical. The initiatives must work within the framework of Wyoming water law, and the feedback provided can inform future decision making; it is advisory not compelling.

Water Development

1) Infrastructure
    a) Large Storage
        i) Warren Bridge Dam Permitting
        ii) Fontenelle Dam Project
        iii) Green River Lakes Reservoir
        iv) Wind River Reservoir Project
        v) Glendo Modification
        vi) Rock Creek Reservoir Storage Project Assessment
    b) Small Storage
        i) Ten in Ten Project
    c) Major Conveyance Task Force Project
    d) Upper Green to North Platte Transbasin Project

2) Hydropower
    a) Comprehensive Low-head Hydropower Plan
    b) Low-head Hydropower Production Rate Incentives
    c) Flaming Gorge Wind/Hydro Energy Storage Project

3) Planning and Funding
    a) Omnibus Water Education Effort
    b) Water Development Construction Emphasis Initiative
    c) Collaborative Planning and Authorization Processes
    d) Stratified Project Size and Selection Process

4) Other
    a) Collaborative Weather Modification
    b) Produced Water Center

Water Management

1) Primacy and Regulation
    a) Water Law Protection
    b) State Management of USBOR Facilities
    c) Water Issues on Federal Lands
    d) North Platte Storage and Management
    e) Historically Significant Water Right Preservation
    f) Agriculture and Produced Water Beneficial Use and Protection Policies
    g) Groundwater Analysis and Control

2) Customer Service
    a) Uniform Hydrographers Operations Manual
    b) State Engineer Technology Pilot
    c) Office of the Landowner Ombudsman
    d) Water Quantity Council
    e) Irrigation Efficiency Adjudication Procedures
    f) Accelerated Transfer Protocols
    g) Temporary Use Protection Policies

3) Information
    a) Credible Climate, Weather, and Stream Flow Data
    b) Drought and Climate Variability Planning
    c) Unified Public Database
    d) Historic Public Data Initiative
    e) Small Reservoir Management Documents

<u>Water Conservation and Protection</u>

1) Planning
    a) Surface Water Recharge Areas
    b) Flood Planning
    c) Small On-site Wastewater Septic Planning
    d) Irrigation Benefit Master Plan
    e) Highway Water Planning
    f) Greywater

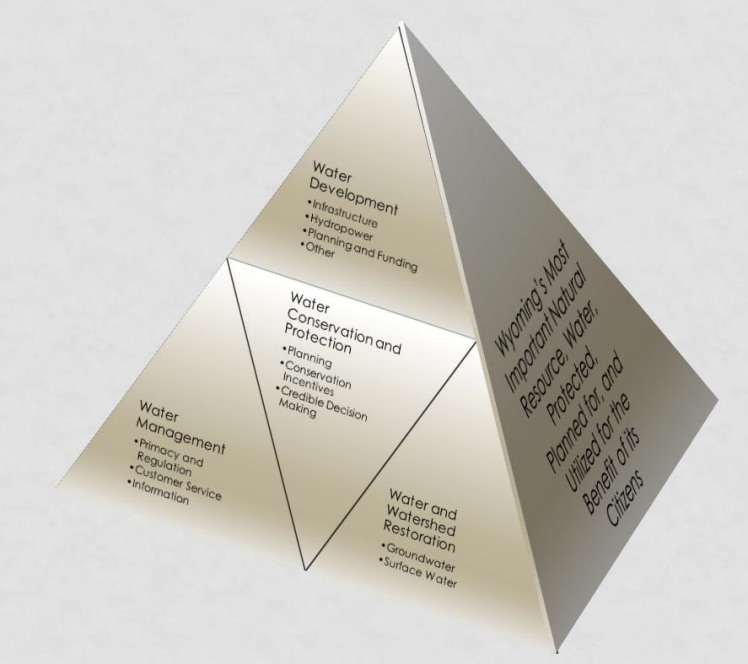
2) Conservation Incentives
    a) Agricultural Loan Guarantee Program
    b) Ecosystems Services Pilot (Water Management)
    c) Electricity Rate Incentives for Conservation
    d) Watershed Management Incentives Program
    e) Municipal Project Demand Management

3) Credible Decision Making
    a) Conservation Technical Assistance
    b) State Nutrient Criteria Primacy
    c) Water Quality Data Improvement Initiative

Water and Watershed Restoration

1) Groundwater
    a) Atlas "D" Missile Silo Aquifer Restoration
2) Surface Water
    a) North Platte River Restoration
    b) Guernsey Reservoir Restoration
    c) Invasive Control and Cottonwood Reforestation
    d) Conifer Reforestation
    e) Fish Passage Restoration Emphasis
    f) Forest Management for Watershed Improvement
    g) Recreational In-Channel Diversions (RICD)

Wyoming Water Strategy Public Input Sessions
Possible Initiatives - Descriptions:



(Possible Initiatives)

Water Development

1) Infrastructure
   a) Large Storage
      i) Warren Bridge Dam Permitting - Nationwide, water is being recognized as an increasingly valuable resource, as well as one whose supply may be in greater demands if drought continues or trends in climate become more permanent. It is responsible for Wyoming to prepare to meet its own water needs and obligations to downstream states in worst case scenarios. This can be done through the development of storage. This initiative is to begin the permitting and planning stage for a large dam on the Upper Green River near the Warren Bridge. This would be a structure capable of 50,000 to over 150,000 acre feet of capacity.
      ii) Fontenelle Dam Project - Water is Wyoming's most important natural resource. Capacity to store and beneficially use water is the best protection to the state, municipalities, businesses and individuals. It insures use in the future is possible. An accessible pool of stored water provides assurance that commitments can be met to deliver water to downstream states as agreed to by compact. Fontenelle Dam was not completed to allow

it to perform these functions. Completion and dam face protection would allow roughly 200,000 acre feet of storage to be utilized on the Upper Green without a noticeable change in the environmental footprint of the development. This initiative will initiate the planning, permitting, and collaborative agreements necessary to realize the full potential of this asset.

iii) Green River Lakes Reservoir - Water is an increasingly valuable resource whose supply will be in greater demand if draughts persist or if more permanent shifts in climate occur. Significant development of reservoir storage on Colorado River tributaries in Colorado, near the continental divide, has proven the value of large, high elevation storage projects. Having access to storage in large reservoirs on the Green River will help prepare Wyoming to meet its future water needs and obligations to downstream states in poor water years. This initiative is to begin the exploratory agreement and planning phase for a large dam and reservoir, likely in excess of 200,000 acre feet in capacity, on the Upper Green River near or above the National Forest Boundary.

iv) Wind River Reservoir Project - Cooperative State and Tribal Large Reservoir Project Development – This initiative is to create a joint task force with legislators, tribal government technical representatives, and state agencies to move forward the study and development of large scale storage in cooperation with the Wind River Indian Reservation. Some of the best existing locations in Wyoming for storage are within the Wind River Reservation Boundaries. Tribes have identified opportunities for increased agriculture and irrigation on tribal lands, the state has identified opportunities as well. Building on existing examples of multi state cooperative projects that exist on the Colorado system, Wyoming will work with the tribes to plan and utilize water for the benefit of all.

v) Glendo Modification - There is a possibility that alteration of the outlet works on the Glendo dam could create greater water storage carryover capacity. This initiative would result in the preliminary study and recommendations to move that project forward.

vi) Rock Creek Reservoir Storage Project Assessment - Water is Wyoming's most important resource. As such, it is responsible for Wyoming to prepare to meet its own water needs and obligations to downstream states. A reservoir high on the North Platte system might potentially provide for additional beneficial uses in the Southeast portion of the state, as well as helping to provide assurance that Wyoming meets its obligations related to the North Platte in the face of increasing environmental pressure. This initiative would support the exploratory phase of reservoir development at a location on Rock Creek near McFadden, Wyoming.

b) Small Storage

i) Ten in Ten Project - Wyoming has at least ten small water storage facilities that should be completed as soon as possible. This initiatives goal is the completion of a minimum of ten small (less than 50,000 acre feet) reservoirs in the next 10 years. Current possible projects are in Carbon, Sweetwater, Johnson, Hot Springs, Sublette, Big Horn Sheridan, and Lincoln Counties and range from 2,300 to 11,000 acre feet of capacity. This

initiative provides executive support for all appropriate actions to accelerate the completion of these projects.

c) Major Conveyance Task Force Project - Large delivery systems for irrigation water can be greatly improved statewide. Broken head gates or failing ditches, seepage, and even evaporation from canals can result in significant water loss. This initiative would result in the development of a task force to create recommendations for mechanisms allowing irrigators and/or districts to leverage private and federal funds more effectively to repair infrastructure.
d) Upper Green to North Platte Transbasin Project - This initiative suggests that Wyoming develop planning for a transbasin diversion to bring water from high in the Upper Green to the North Platte system.

2) Hydropower
   a) Comprehensive Low-head Hydropower Plan - Wyoming's Congressional Delegation was active in creating change in regulations opening the door for significant application of hydropower generation on Wyoming irrigation canals. There are projects in the Big Horn Basin and elsewhere that show the viability of the technology in Wyoming. This initiative would be shared with the Energy Strategy to build a comprehensive analysis, plan, and recommendations for expanding small hydropower on canals statewide.
   b) Low-head Hydropower Production Rate Incentives - Currently, irrigation districts who would develop low head hydropower must sell power at wholesale prices while irrigators purchase at retail to run their irrigation systems. This initiative would explore allowing irrigation districts/communities that produce electricity to buy power at the same rate, or more similar, to that which they receive upon selling to the grid.
   c) Flaming Gorge Wind/Hydro Energy Storage Project - Hydropower is an important beneficial use of Wyoming's water. Wind is another energy source that is available in the state, but that lacks hydropower's dependability. This initiative would couple wind power and hydro generation capacity. It would result in a study and NEPA analysis. Using wind energy, water in a pipeline from Flaming Gorge would be pumped to an upstream holding location, such as Fontenelle reservoir, during times of high wind and productivity. Hydropower could then be generated using the same systems as water moves back down the Gorge. Similar projects are in use today in Colorado where hydropower is used to pump water, then generate electricity during high demand hours.

3) Planning and Funding
   a) Omnibus Water Education Effort - Public outreach in relation to water development and management can be improved. The story of water projects and efforts within the Omnibus Water Bill needs to be told more clearly. This initiative will result in Water Development improving existing outreach techniques and creating new opportunities through technology.
   b) Water Development Construction Emphasis Initiative - This initiative would result in an analysis of Water Development expenditures, and explore the ways to increase the

percentage of state money spent on project implementation as opposed to planning costs.

c) Collaborative Planning and Authorization Processes - Geographic planning, often on a watershed scale, and assessments by governmental technical experts, such as the State Engineer, Department of Environmental Quality water experts, or even local government such as Conservation Districts are common. This initiative is to develop a modular framework for information sharing, planning, and decision making that allows for building on existing plans, or utilizing decisions and planning of one agency to meet prerequisites for actions by another. This would have broad applicability. The goal is to allow the creation of planning, or technical analysis of an agency to at least partially meet the business requirements of another; ultimately saving the state time and money.
d) Stratified Project Size and Selection Process - The purpose of this initiative would be the creation of a process where prioritization incorporated mechanisms to balance efforts and expenditures between large and small water development projects.

4) Other
   a) Collaborative Weather Modification - This initiative would support the development of agreements with downstream states to fund cloud seeding in Wyoming.
   b) Produced Water Center - This initiative would initiate work with the legislature to develop analysis of a public private partnership developing facilities for innovative water treatment and management. It would be similar to the integrated test center studying carbon capture, but its emphasis would be water.

Water Management

1) Primacy and Regulation
   a) Water Law Protection - The basis of Wyoming's water law has remained relatively unchanged for over 100 years. The system has protected the custom and culture of the state, as well as its primary industries. Recent federal efforts through a variety of agencies have resulted in attempts to erode authorities or circumvent statute. This initiative results in emphasis within state agencies and the Attorney General's office on aggressive defense of Wyoming's primacy in both water quality and quantity issues. Wyoming will maintain control of its water, and where practical, provide support to individuals and states that face challenges of their rights as a result of federal encroachment.
   b) State Management of USBOR Facilities - The state of Wyoming currently pays a significant fee to the USBOR to manage storage facilities within the state. Wyoming may be able to recognize operational and financial benefits by managing these facilities. This initiative would result in the exploration of agreements to assume management of facilities within the state.
   c) Water Issues on Federal Lands - Different paradigms have existed in the State Engineers Office to address water rights on federal lands over time. Water is the property of the state, and only the state should regulate its use. Managing water on federal lands can be challenging. A mechanism should be explored, or policy developed, to insure that federal agencies do not seek to control water rights and management decisions related to water that are inherently the purview of beneficial users and the state.
   d) North Platte Storage and Management - Water is an increasingly valuable resource whose supply will be in greater demand if draughts persist or if more permanent shifts in climate occur. Continued development of reservoir storage in Colorado and other states demonstrates the value of large, high elevation storage projects in upper basins. Negotiating for the development of additional large storage projects on the North Platte could help prepare Wyoming to meet its future water needs and obligations to downstream states in poor water years. This initiative would open dialogue with downstream states and federal agencies on increased storage on the Upper North Platte.
   e) Historically Significant Water Right Preservation - Water is the state's most valuable natural resource. Water law in the west dictates that it is managed by the doctrine of prior appropriations, where the first right in time is the first in line to receive their appropriated share of water. Unfortunately, if these rights are abandoned, the early priority that they represent is lost. Although it is the users right to abandon, it can have the detrimental effect of reducing the cumulative number of low year, high priority rights within the state. This initiative would develop a protocol requiring a good faith effort to "place" these older rights rather than see them lost over time. This process needs to be simple, streamlined, and avoid costly externalities.
   f) Agriculture and Produced Water Beneficial Use and Protection Policies- New technologies are continually improving capacity and reducing the costs of treatment and reuse of water. This initiative would result in the Wyoming Department of Environmental Quality revisiting the water quality rules and regulations to allow for greater flexibility to beneficially use/reuse

produced and/or treated water for agriculture or industrial purposes.

g) Groundwater Analysis and Control - The availability of tools to manage groundwater needs to be increased. It should be streamlined. This initiative would seek changes in rule or statute so that areas where groundwater use outstrips availability would automatically become Groundwater Control Areas. It would also result in cooperative studies, led by the State Engineer, to explore the agreements, assurances, regulations, and markets that can be leveraged to manage use and demand within the areas.

2) Customer Service
   a) Uniform Hydrographers Operations Manual - Water Law and management are complex. Practices, protocols, and decisions related to its regulation by the state should be predictable and uniform throughout the state. This initiative will result in the development of a uniform, easily understood manual of standards and protocols for all hydrographers.
   b) State Engineer Technology Pilot - Customer service and communication are not optional for public service agencies. They should be hallmarks of their business practices. New technology has made it possible for greater information sharing, customer service, and transparency. This initiative will result in a pilot project and recommendations on tools that can be used statewide by the SEO to better provide customer service and conduct business with their customer base.
   c) Office of the Landowner Ombudsman - Private property rights are critical and should be protected. Understanding those rights, protecting them, and making decisions on the value and use of those rights can be challenging. Water rights and land use rights can be especially complex. This initiative will result in the Governor working with the legislature to develop an Ombudsman's Office for landowners; providing decision making support, information, and facilitation to landowners, water rights holders, and the public on a variety of fronts.
   d) Water Quantity Council - The current paradigm for addressing concerns related to water quantity requires an individual to work with and then appeal decisions primarily through the State Engineer and his employees. This initiative is to work with the legislature to create an independent review board for the decisions arrived at by the Board of Control - who are employees of the SEO. It would be similar to the Environmental Quality Council within DEQ operations. It would provide users an opportunity appeal decisions of the SEO prior to filling in municipal courts.
   e) Irrigation Efficiency Adjudication Procedures - This initiative would result in an effort within the SEO to identify mechanisms to accelerate the adjudication process for moving to more efficient irrigation as well as analyzing incentives and management options for those who do. For example, moving from flood to sprinkler irrigation. There is currently little to incentivize more efficient or effective use of water in these cases. Options such as Acre Foot Equivalent Irrigation should be analyzed. This initiative would explore changes that would allow for water savings to be applied to new acreage under the existing priority date.
   f) Accelerated Transfer Protocols - This initiative would result in the SEO exploring streamlined methods for transfer of water rights from unproductive lands to better lands for

beneficial use. The uses would have to be similar, within a given geography, and result in no harm to other users.

g) Temporary Use Protection Policies - This initiative would result in the development of appropriate mechanisms increasing flexibility for temporary use transfers without the risk of abandonment. Temporary water use agreements can only be utilized for 4 years due to the risk of abandonment. This initiative would protect the original quantity and use for a longer duration as long as the short term use was truly temporary and resulted in no harm to other users.

3) Information
   a) Credible Climate, Weather, and Stream Flow Data - Attention to climate and water will increase over time. In order to prepare for questions and challenges Wyoming needs robust scientific data. This initiative would result in work to fund additional climate and stream flow data collection throughout the state.
   b) Drought and Climate Variability Planning - Wyoming should work to develop practical, economically viable, and responsible solutions to mitigate negative impacts and concerns caused by climate variability. This initiative would result in discussions and planning to address variability in climate, including but not limited to: forest management, water storage, irrigation efficiencies, habitat development, species management, and other areas.
   c) Unified Public Database - All water quality and quantity data should be available in a single location and database. This initiative would result in work to obtain the legislative funding and guidance for bringing all water and climate data from agencies on quality, quantity, surface and groundwater into a single database.
   d) Historic Public Data Initiative - This initiative would work to provide funding to the Wyoming State Engineer to digitize historic hydrologic data.
   e) Small Reservoir Management Documents - Large reservoirs have detailed documents for reservoir management. The smaller reservoirs do not. This initiative would instruct applicable agencies to develop requirements for greater documentation and information sharing on these small reservoirs.

Water Conservation and Protection

1) Planning
   a) Surface Water Recharge Areas - States such as Arizona have proved the efficacy of storing water in aquifers through recharge so that it can be pumped and used at a later date. This initiative would identify areas in the state where water recharge should be a priority. It could be applied to the surface, quantified, and later employed for a beneficial use by pumping. The initiative would also explore the complexities of quantifying and managing the resource.
   b) Flood Planning - Flooding has occurred in many Wyoming communities. There is significant benefit in proactive planning. Communities statewide should identify opportunities to implement flood mitigation. This initiative makes flood planning a priority of the State for the health and safety of citizens.
   c) Small On-site Wastewater Septic Planning - Because we are a largely rural state, large numbers of homes in Wyoming depend on small onsite wastewater systems (septic systems) for disposal of waste from toilets, sinks, and other household sources of gray and black water. If these systems fail, or if they are constructed improperly, they can cause significant pollution in local water bodies. The pollution can result in impaired streams and public health concerns. State certification for septic system installers does not exist, and construction requirements across the state are not uniformly up to the standards of technology. This initiative would result in the development of a task force to assess the current standards, look at best practices, and make recommendations for improvement.
   d) Irrigation Benefit Master Plan - Develop a Master Plan and Map, based on best available science, with the Wyoming Water Development Commission, State Engineers Office, Department of Agriculture and University of Wyoming recommending different irrigation conveyance and application development where either efficiencies in conservation or recharge should be prioritized.
   e) Highway Water Planning - This initiative would result in the Wyoming Department of Transportation developing Best Management Practices (BMPs) along I-80 and other interstates to prevent pollution. Structures such as Waste and Sediment Control Basins (WASCoBs) and other BMPs could control not only standard non-point sources of pollution, but also more hazardous events, such as tanker spills, keeping them from impacting water bodies.
   f) Greywater - The use of water from washing machines, sinks, and other areas in the home (grey water) for irrigation is an attractive conservation measure. However, greywater can be high in pollutants. Proper use and management of greywater is important to insure human health and environmental safety. This initiative would result in the development of rules and regulations for the use of greywater in Wyoming.

2) Conservation Incentives
   a) Agricultural Loan Guarantee Program - Programs currently exist within state government to loan funds to individual agricultural producers for irrigation infrastructure. This initiative would result in collaboration with the legislature to explore a transition from the current

fixed rate loan program to a loan guarantee program. The result would leverage private funding through banks, allowing them to loan at low interest rates with confidence.

b) Ecosystems Services Pilot (Water Management) - Environmental services, such as water use, management, open space, and habitat, are increasingly seen as commodities that can be managed through market based approaches. This initiative is to develop suggested protocols for oversight of ecosystem services in Wyoming that do not currently fall under the purview of regulatory agencies, such as the US Fish and Wildlife Service and the Army Corp of Engineers. The pilot areas for transaction would be in ground and surface water management. Water rights are real property. Individuals can manage their water as they see fit within the confines of Wyoming water law. A pilot project on a watershed level, would allow parties to incentivize the timing and use of water in a given watershed or aquifer for a given use. Examples of a cooperative pilot might include groundwater or surface water use management.

c) Electricity Rate Incentives for Conservation - In most areas within the state irrigators pay the same rate for power use regardless of the time of day. This means that they are often using pumps and equipment to irrigate during peak demand times. Utilities could create incentives to conserve during peak hours and run irrigation equipment at night, significantly reducing the evaporative loss of water. This initiative would develop a task force to explore these rate related incentives.

d) Watershed Management Incentives Program - Protection of water quality and conservation of water quantity are public benefits. Cost share programs are public/private partnerships that encourage landowners to invest in environmental improvements that are ultimately in the interest of the general public. The use of state funds for environmental improvements, also called Best Management Practices (BMPs), on private property should be considered a public benefit. This is contingent on the improvements being recognized BMPs for water quality or conservation applied as part of a conservation plan. This initiative would result in work with the legislature to expand the existing Water Development Small Water Program and to increase its utility and the scope of lands and activities where it can be applied to; more closely mirroring the USDA NRCS' Environmental Quality Incentives Program.

e) Municipal Project Demand Management - Although the Municipal Fiscal Procedures Act (MFPA) strengthened fund accounting, if government entities are not accurately capturing the costs associated with services and passing those costs to the consumer the result is subsidy. This initiative would increase emphasis on quantifying and recapturing the costs of supplying municipal services, such as water, from the actual users as a requirement for obtaining state funds for municipal projects.

3) Credible Decision Making

a) Conservation Technical Assistance – Federal agencies provide most of the technical assistance for the application of conservation practices in the state of Wyoming with the assistance and support of local governments. This initiative is to explore options for the state entering into agreements whereby federal funding can be leveraged to allow state

leadership in providing technical assistance professionals for conservation planning in lieu of the federal government.

b) State Nutrient Criteria Primacy - Wyoming, not the federal government, is best poised to make decisions on its water quality regulation for the benefit of its citizens. In order to avoid EPA mandates on water quality regulation regarding nutrients, Wyoming should proactively develop and implement numeric standards for nutrients in the waters of the state.

c) Water Quality Data Improvement Initiative - Wyoming Department of Environmental Quality (DEQ), along local governments statewide, has developed consistent and scientifically defensible chemical, physical, and biological standards and testing protocols and programs. Questionable data, along with pressure from third parties whose protocols, methods, and goals may not coincide with those of the state, increase the importance of data integrity used in decision-making. This initiative will result in an evaluation and upgrade of the DEQ water quality monitoring program and standards in cooperation with local governments. These entities have statutory obligations for natural resource protection in the state. The result will be a program that encourages third party data for informational purposes and guidance, but that requires credible data collected by government entities with statutory authority for purposes of decision-making.

Water and Watershed Restoration

1) Groundwater
   a) Atlas "D" Missile Silo Aquifer Restoration – Historic Atlas Missile maintenance operations near Cheyenne Wyoming, in Laramie County, have resulted in a plume of groundwater pollution that has the potential to negatively affect important groundwater resources. This initiative seeks to establish a coordinated response to the challenge by all pertinent agencies, led by the Governor, state, and local government leaders.

2) Surface Water
   a) North Platte River Restoration - The North Platte is one of the most important and utilized rivers in the state. Restoration efforts on the river are currently ongoing in areas like Casper, Saratoga, and Douglas. The initiative is to support the continued efforts to restore and improve the quality of this river system and its related watersheds.
   b) Guernsey Reservoir Restoration - This initiative would develop planning and funding for dredging at the Guernsey Reservoir.
   c) Invasive Control and Cottonwood Reforestation - Changes in management, invasive species, and other factors have led to the gradual decline of native cottonwoods. This initiative would result in a coordinated statewide effort to remove Russian olive and Salt cedar and plant and reforest with cottonwoods and other native species.
   d) Conifer Reforestation - The Mountain Pine Beetle has decimated a number of forested areas in Wyoming. This initiative would identify critical watersheds and critical areas within those watersheds to prioritize for reforestation.
   e) Fish Passage Restoration Emphasis - Wyoming irrigation infrastructure is aging. Repairs and replacement create natural opportunities for improvement. A key improvement is creating fish passage and/or protection. This initiative would result in a greater emphasis on training, outreach and cooperation with landowners to provide opportunities to work with interested parties and agencies to plan for and install fish friendly structures when working on irrigation infrastructure.
   f) Forest Management for Watershed Improvement - Although fire and deforestation are often recognized as detrimental to watershed health, the negative effects of high density stands of forest are rarely discussed with relation to watersheds and water yield. Some density and vegetation makeup are beneficial to controlling hydrographs and erosion, but a balance for maintaining strong water yield is also beneficial. This initiative emphasizes managing forests and harvests in a balanced manner.
   g) Recreational In-Channel Diversions (RICD) - RICDs are increasing in their popularity. Some states recognize them as a beneficial use. This initiative would develop a task force to study the economic benefit of, and the opportunity for placement of additional RICDs in key locations as a part of stream restoration projects.